REMARKS

Bearing in mind the comments of the official action, the claims and Abstract have been amended to place the application in condition for allowance, and an early indication of the same would be greatly appreciated.

Request for Initialed Copy of PTO Form 1449

The Official Action provided a copy of the initialed PTO Form 1449 for the IDS submitted September 22, 1999, however the initialed 1449 for the IDS submitted August 28, 2000 has not been received. Applicants respectfully request that the Examiner provide an initialed copy of the PTO Form 1449 for the IDS submitted August 28, 2000.

Status of Claims

Claims 1-40 are pending in the present application. Claims 1, 3, 5, 6, 9-11, and 15 have been amended so as to remove the basis for indefiniteness as stated in the official action. No new matter has been added by these claim amendments which were made solely to overcome the indefiniteness rejections by clarifying the recitations, and not to distinguish over any of the applied art. Claims 1, 11, 15, and 18 are independent, with claims 18-40 being added by the present Amendment.

Discussion of a Preferred Embodiment

As an aide to the Examiner's understanding of the present application, the following discussion of a preferred embodiment is provided.

In a preferred embodiment, the present application relates to a millimeter band signal transmitter transmitting/receiving system, and a house provided with the same, and more specifically to a millimeter band signal transmitting/receiving system for indoor transmission of a video signal using a millimeter wave, and a house provided with the same. In a preferred embodiment, a transmitter transmits one or more indirect signal waves from the main-lobe or the side lobe of a transmit antenna, and a direct path signal wave between the transmit antenna and the receive antenna is transmitted in a side-lobe of the transmit antenna. The receiver simultaneously receives each of the indirect and direct path signal waves when the direct path to the receive antenna is unobstructed. If the direct line of site path between the transmitter and receiver is blocked, the receiver only receives one or more of the indirect path signal waves, thus ensuring that good transmission/reception are still achieved.

In a further preferred embodiment, the indirect path signal wave is propagated from the transmitter through the transmit antenna, and is reflected from a reflector which may be a part of the structure of a house or building.

In all embodiments of the present application, a single receiver and a single receive antenna are preferred. However, various other embodiments of the present application may use one or more transmitters and associated transmit antennae to ensure that good communication is maintained, even

when the direct path between a transmit antenna and a receiver is blocked.

The Official Action

The Official Action rejects claims 1 and 15 under 35 U.S.C. §112, second paragraph, as being indefinite; rejects claims 1-17 under 35 U.S.C. §102(b) as being anticipated by Freeburg et al. (USP 5,355,520); and rejects claims 8 and 14 under 35 U.S.C. §103(a) as being unpatentable over Freeburg et al. '520 in view of Freeburg (USP 5,095,535). With respect to the rejection of the original claims over the applied art, Applicants respectfully traverse.

Discussion of the Applied Art

Freeburg et al. '520

Freeburg et al. is directed to a wireless in-building RF communication system operating in a microwave frequency range which is also utilized by a nearby point-to-point microwave communication system to allow for frequency reuse. Central modules and user modules each consist of RF transceivers and antenna systems. The wireless communication system includes a mechanism for limiting the magnitude of RF signals transmitted by it to be less than a predetermined level sufficiently small to prevent interference with the nearby point-to-point communication system.

As shown in Freeburg et al. Figures 1 and 3, control module 12 acts as a

node which is capable of communication with each of user modules 14. Control module 12 and each of user module 14 consists of a microwave RF transceiver capable of communications with each other. Each user module 14 contains a plurality of directional antennae 16; Freeburg et al. '520 prefers that control module 12 contains the same antenna arrangement, permitting the best antenna as control module 12 and the best antenna a user module 14 to be selected for communications therebetween.

External window 22 represents openings or ports through which microwave RF signal transmitting inside the building can escape without substantial attenuation. Freeburg et al. has, as one of its objectives, the control of undesired radiation of RF signals generated within the building, to allow concurrent use with other communication systems operating at the same frequencies, for example, microwave point-to-point transceiver 26 that utilizes the same frequencies as the RF LAN system in building 10.

Freeburg et al. uses an antenna selection technique using various parameters, and user module 14 and control module 12 are each capable of selecting the most appropriate antenna to facilitate communications between a particular control module 12 and user module 14. Freeburg et al. '520 chooses the antenna based on criteria including the amount of RF energy radiated outside the building, and which may interfere with the point-to-point microwave communication system located nearby. Further, the distance

between an exterior window from which the RF LAN signals are radiated and the receive antenna of an external point-to-point microwave receiver is established as a separation distance determined by at least the capture ratio of the point-to-point system. From this information, Freeburg et al. '520 derive the minimum acceptable distance that the RF LAN system may be located with respect to the center beam of the point-to-point communication system antenna.

With this restriction in mind, Freeburg et al. '520 employs switching of alternate antennae to preclude exceeding the allowable RF transmission level outside of the building. For example, Figure 4 of Freeburg et al. illustrates an internal arrangement of antenna switching inside user module 14. Opening the respective switch can disable each of the six antennas within user module 14. These switches provide a means for inhibiting certain antennae, thereby minimizing outside radiation levels that would have been caused by the use of such antennae. Applicants further note that user module 14 contains an RF transceiver, and multiple independent antennas.

Freeburg '535

Freeburg '535 is directed to an RF cellular communication system that overcomes multi-path interference by employing relatively narrow beam antenna sectors, and by selecting the best communication path established

between two terminals. The communication path selection process includes determining the signal integrity of data communicated between the terminals.

Freeburg '535 employs multiple sectors provided by multiple directional antennas at the receiving terminal to overcome multi-path interference. The terminal receiving the multi-path signal evaluates the signal at each of the multiple sectors, and selects the user data that is received in the path that has the least amount of signal degradation caused by the multi-path interference. This selected path is in use for subsequent transmission of the data between both terminals in a duplex operation.

Distinctions over the Applied Art

As a first distinction, the applied art, neither alone nor in combination, teaches or suggests a propagation path forming portion forming at least one indirect propagation path for propagation of a signal wave, and a receiver simultaneously receiving a plurality of signal waves from a plurality of propagation paths including the line of site propagation path to the transmitter and at least one indirect propagation path, as recited in claim 1.

As a second distinction, the applied art, neither alone nor in combination, teaches or suggests a receiver arranged to simultaneously receive a plurality of signal waves output from a plurality of transmitters, as recited in claim 11.

As a further distinction, the applied art, neither alone nor in combination, teaches or suggests the receiver simultaneously receiving a plurality of signal waves through a plurality of propagation paths including a line of sight propagation path to the transmitter and at least one indirect propagation path, as recited in claim 15.

Therefore, as the applied art is deficient in disclosing all the elements of Applicants' invention as recited in independent claims 1, 11, and 15, withdrawal of the rejections and allowance of each of claims 1-17 are respectfully requested.

New Claims

New claims 18-40 have been added to further define that which the Applicants regard as their invention. These claims have been drafted so as to avoid the indefiniteness rejections, and so as to distinguish over the art of record.

For example, independent claim 18 recites, in part, that the receiver receives a signal through each of plurality propagation paths including a line of sight propagation path when in a normal state, the line of sight propagation path is unobstructed, and further recites that the receiver receives a signal through each of the plurality propagation paths except the line of sight of propagation when the line of sight propagation path is obstructed. The applied

art does not teach or suggest these features.

Further, the applied art does not teach or suggest, as recited in new claim 28, that the line of sight propagation path between the associated transmit antenna and the receive antenna is formed in a side lobe of the associated transmit antenna. Further, as recited in dependent claim 29, the plurality of propagation paths of the signal except the line of sight propagation path, are formed in a main lobe of the associated transmit antenna. The applied art does not teach or suggest these features.

As a further example, dependent claim 31 recites the receive antenna being a single receive antenna. The applied art directly teaches against this feature.

As a final example, the applied art does not teach or suggest two transmitters and two associated transmit antennas, wherein each of the two associated transmit antennas provides a separate line of sight propagation path to the receive antenna, as recited in new claim 24.

As the applied art does not teach or suggest all the features of Applicants' invention as recited in new claims 18-40, consideration and allowance of these claims are respectfully solicited.

Conclusion

In view of the above amendments and remarks, reconsideration of the rejections and allowance of each of claims 1-40 in connection with the present

application are earnestly solicited.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), applicants hereby petition for an extension of time for one (1) month to June 27, 2001 for filing a reply to the Office Action dated February 27, 2001 in connection with the above-identified application. A check in the amount of $110 is enclosed herewith.

If there are any outstanding matters remaining in this application, the Examiner is invited to contact Larry J. Hume (Registration Number 44,163) in the Washington, D.C. area at (703) 205-8000 in order to discuss these matters.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH,LLP

By _____
Donald J. Daley, Reg. No. 34,313

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000

DJD/LJH/kss
0033-0619P

Enclosures: Replacement Abstract of the Disclosure
Marked-up version to show claim changes made

ABSTRACT OF THE DISCLOSURE

A millimeter band transmitter transmits one or more indirect path signal waves from the main lobe of a transmit antenna, and a direct path signal wave is transmitted in a side lobe of the transmit antenna. A receiver simultaneously receives each of the indirect and direct path signal waves if the receive antenna is unobstructed. If the direct line of sight path between the transmitter and receiver is blocked, the receiver only receives one or more of the indirect path signal waves.

Marked-up Version to Show Claim Changes Made

1. (Amended) A millimeter band signal transmitting/receiving system, comprising:

a transmitter transmitting a signal wave [with a millimeter band];

a propagation path forming portion forming at least one indirect propagation path for propagation of said signal wave[,]; and

a receiver simultaneously receiving a plurality of said signal waves from a plurality of propagation paths [of] including a line of sight propagation path to said transmitter and said at least one indirect propagation path.

3. (Amended) The millimeter band signal transmitting/receiving system according to claim 2, wherein said reflector is arranged substantially [almost] in parallel to [an imaginary] a line of sight between said transmitter and said receiver.

5. (Amended) The millimeter band signal transmitting/receiving system according to claim 2, wherein said reflector has [its] a surface covered by an insulating material.

6. (Amended) The millimeter band signal transmitting/receiving system according to claim 2, wherein said reflector has [its] a surface covered by a transparent insulating material.

9. (Amended) The millimeter band signal transmitting/receiving system according to claim 1, wherein said receiver and said transmitter are provided inside a house,

said propagation path [is] includes a structural component defining an internal space of said house and reflecting a signal wave transmitted from said transmitter, and

said transmitter is spaced by a prescribed distance from said structural component defining said internal space of said house for transmitting said signal wave [with the millimeter band] at a prescribed transmission angle[of at least a prescribed value].

10. (Amended) The millimeter band signal transmitting/receiving system according to claim 9, wherein each of said prescribed distance and said prescribed transmission angle [of at least said prescribed value] is determined depending on a region for propagation of said plurality of signal waves and a positional [relation] relationship between said transmitter and said receiver.

11. (Amended) A millimeter band signal transmitting/receiving system, comprising:

a plurality of transmitters[for a millimeter band]; and

a receiver arranged to simultaneously receive a plurality of signal waves output from said plurality of transmitters,

said plurality of signal waves being transmitted from said plurality of transmitters having a same frequency.

15. (Amended) A house provided with a millimeter band signal transmitting/receiving system[, comprising] including a structural component defining an internal space and a millimeter band signal transmitting/receiving system, wherein said millimeter band signal transmitting/receiving system [includes] comprises:

a transmitter transmitting a signal wave[with a millimeter band,];

a propagation path forming portion arranged in said structural component for forming at least one indirect propagation path for propagation of said signal wave[,]; and

a receiver simultaneously receiving a plurality of signal waves through a plurality of propagation paths [of] including a line of sight propagation path to said transmitter and said at least one indirect propagation path.